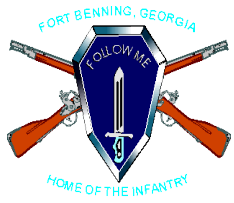


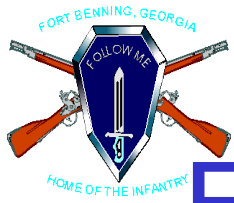
# Heat Injury Risk Management

MAJ(P) Karen O'Brien



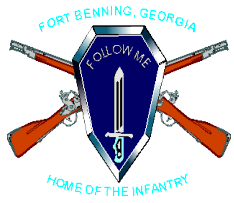
# Outline

- Five steps of heat injury risk management
- Exertional heat injuries
- Water intoxication



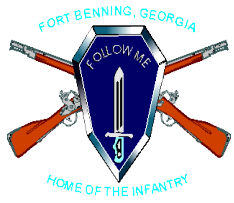
# Five Steps of Heat Injury Risk Management

- Identify hazards
- Assess hazards
- Develop controls
- Implement controls
- Supervise and evaluate



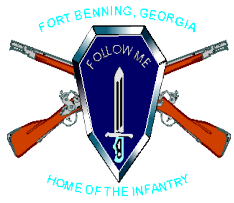
# Heat Injury Hazards are Cumulative

- H- Heat category past 3 days
- E- Exertion level past 3 days
- A- Acclimation/ other individual risk factors
- T- Temperature/rest overnight
- Cluster of heat injuries on prior days=  
HIGH RISK



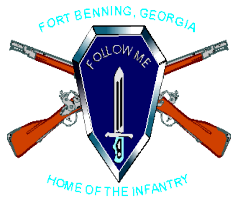
# Individual Risk Factors

- Not acclimated
- Poor fitness ( 2 mi run > 16 min)
- Large body mass
- Minor illness
- Drugs (cold and allergy, blood pressure)
- Highly motivated



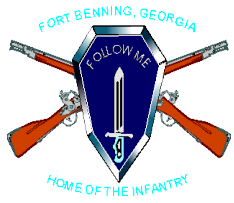
# Individual risk factors

- Supplements- ephedra
- Recent alcohol use
- Prior heat injury
- Skin problems- rash, sunburn, poison ivy
- Age>40



# Impact of dehydration

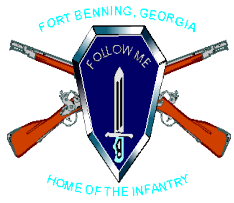
- Degrades performance
  - 4% dehydration degrades performance 50%
- Increases core body temp
  - Every 1% increases core temp .1-.23 C



# Assess Hazards

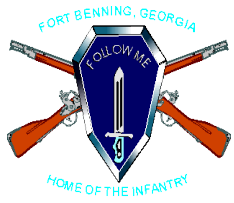
- Modify schedule- time of day, rest
- Clothing
- Schedule highest demand events later in training cycle
- Cumulative Effects- minimize consecutive days of heavy physical training, any heat injuries on previous day?





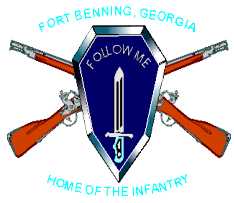
# Develop Controls

- All unit leaders must be familiar with heat injury prevention and recognition
- Ensure acclimation occurs
- Mark Soldiers who are high risk
- Ensure water points accessible/ utilized



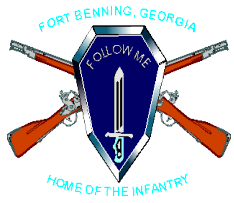
# Develop controls

- Track Wet Bulb Globe Temp (WBGT)
- Track hydration of Soldiers
- Fluid replacement/ work/ rest guidelines



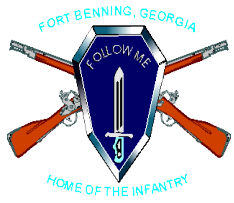
# Implement controls

- Water- better absorbed if supplied in frequent, small amounts, 12 quart max/day
- Food- electrolytes, stimulates thirst
- Keep urine clear
- Work/rest cycles



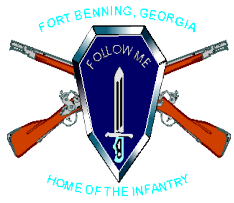
# Implement controls

- Enforce policies
- Spot check junior leaders
- If 1-2 soldiers suffer heat injury-  
stop training and assess situation



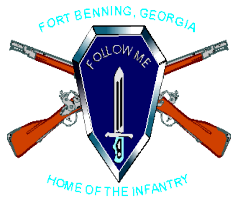
# Symptoms of mild injury

- Dizziness
- Headache
- Nausea
- Unsteady walk
- Weakness
- Muscle cramps
- These folks need rest, water, evaluation
- These are your “canaries in the mine”



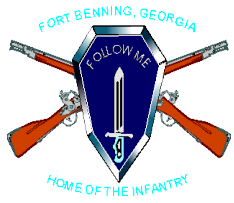
# Emergent symptoms

- Confusion
  - Unresponsiveness
  - Hot body/ high temp  $> 104$
  - Involuntary bowel movement
  - Convulsions
  - Vomits more than once
- 
- Refer to evacuation/ treatment algorithm



# Evacuation criteria

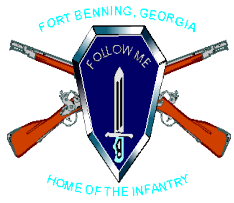
- Vomits more than once
- No improvement after 1 hour of rest and hydration
- General deterioration
- Loss of consciousness/ mental status changes



# Pre-hospital care

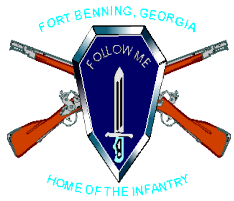
- Cooling is first priority- can reduce mortality from 50% to 5%
- Drench with water
- Fan
- Iced sheets
- Massage large muscles while cooling
- Stop if shivering occurs





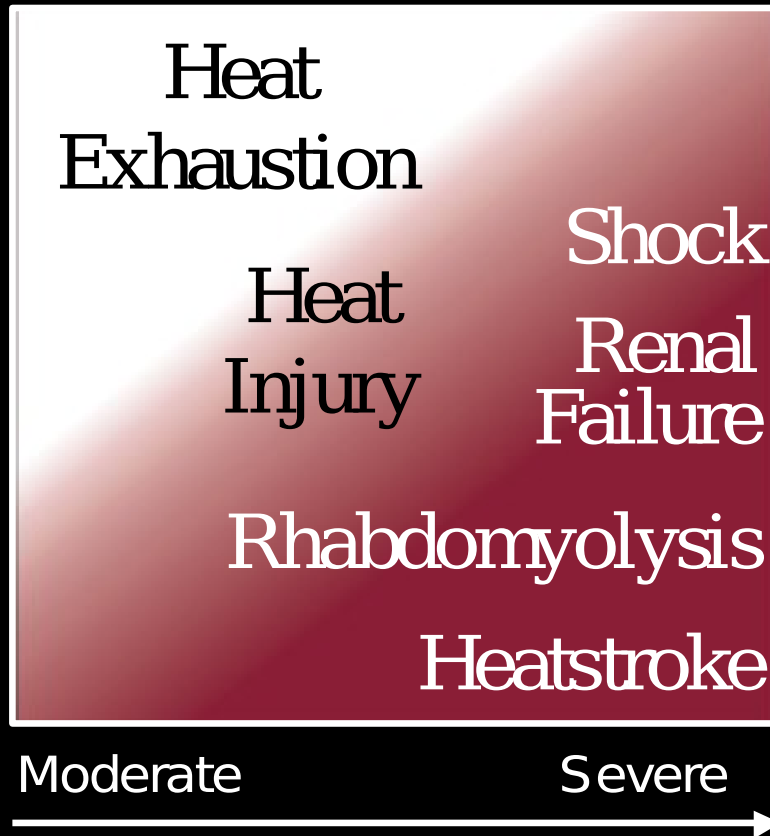
# Pre-hospital care

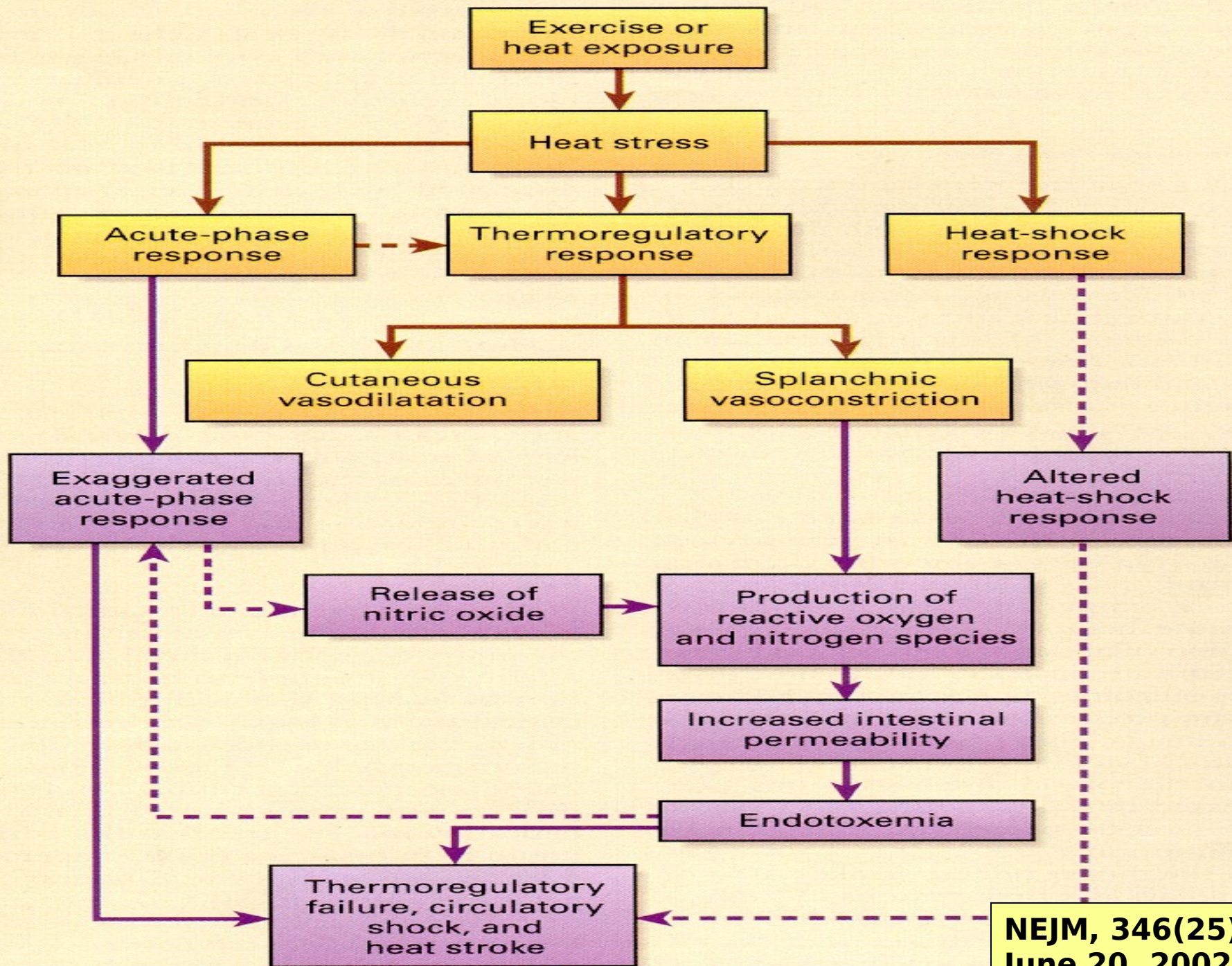
- Undress to briefs
- Oral fluids if alert and not vomiting
- IV while awaiting evacuation

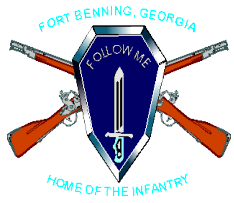


# THE SPECTRUM OF EXERTIONAL HEAT ILLNESS

**Hyperthermia**  
**Dehydration**  
**Nephropathy**  
**Cell Lysis**  
**Encephalopathy**



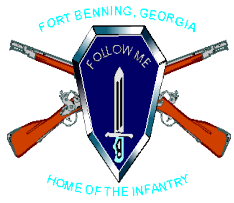




# Heat Stroke

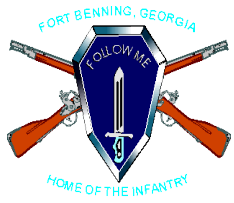
- Core temp > 104 F
- Mental status changes
- Liver damage
- Kidney damage
- Rhabdomyolysis
- Cardiac- arrhythmia, shock
- Blood clotting problems





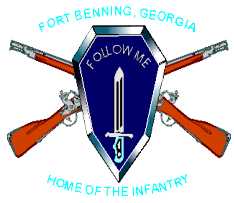
# Water intoxication

- Usually occurs in TRADOC units
- Mental status changes
- Vomiting
- History of large volume of water consumed
- Poor food intake
- Abdomen distended/bloated
- Copious clear urine



# Summary

- Five steps of heat injury risk management
- Exertional heat injuries
- Water intoxication



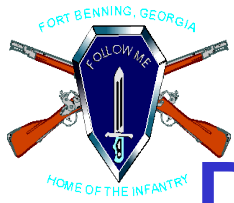
# Handout

- Heat injury prevention poster
- Risk management worksheet
- CHPPM website
- TRADOC Website
- Evacuation algorithm



# Questions?





# Drugs that Interfere with Thermoregulation

- Antihistamines (benadryl, atarax, ctm)
- Decongestants (sudafed)
- High Blood Pressure (diuretics, beta blockers)
- Psychiatric Drugs (tricyclic antidepressants, antipsychotics)